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Jewelry from the environment

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This thesis deals with the development of a body of my own creative work and the teaching of jewelry-working in the secondary schools. Emphasis in both instances was given to the use of the natural environment as a stimulus for design ideas. The philosophy of nature as art forms has been the focus of my creative endeavors for several years. This lead to the design and completion of jewelry, flatware, and holloware in this study. Knowledge gained in my work experiences formed the basis and background of the presentation of these skills to secondary students.

In designing the instructional unit, considerations were given to three major areas: First, motivating students to create designs from nature suitable for jewelry ornamentation; second, introduction to basic tools, equipment, materials and their proper use; third, to give the students the opportunity for experience with projects developed to be a challenge but with realistic goals.

The unit was broken into three projects, working from a lesser degree of difficulty to a more technical one. Processes were simplified to maximize student achievement. They were also set up in a step-by-step manner so that each would lay a foundation for the next. Care was taken to avoid limiting how far the student could carry each one.

The first project dealt with creating a fabricated jewelry item. The objectives were to introduce the tools, equipment, materials and to motivate the students.

The second project, sand casting with pewter, was designed to lead students from fabricating into casting. They first worked in paper and tagboard which was then transformed into wood and metal.

The third project required the design and construction of rings in wax using a more sophisticated mold system for transformation to metal. The objective was to give students a process that would afford them a greater degree of flexibility with sculptural design; inherent to the materials used.

It is reasonable to assume that a high degree of success was achieved in this study in my own creative work. The intent was to develop forms in direct response to the natural environment rather than "stamping out duplicates of foliage." The interesting point here is that a myriad of inspirational resources were used and yet the final result is a series with both similarities and differences. The similiarities possibly resulted from sculptural influences or even from the demand of function in terms of a wearable solution. Differences would have to have been influenced by the desire to invent. As Ocvirk[1] states, "All spacial implications are mentally conditioned by the environment and experience of the viewer. Vision is experienced through the eye, but interpreted with the mind."

The results of that portion of the study involving teaching were assessed by observing these factors: (1) students' genuine enthusiasm demonstrated during the studio work periods; (2) expressiveness and individuality of the objects created; (3) imaginativeness of design; (4) ability to solve visual problems as well as functional problems of wearability; (5) growth in manipulative skill; (6) pride and value placed on their own completed work.

[1]Otto G. Ocvirk and others, Art Fundamentals (Dubuque: Wm. C. Brown Company Publishers, 1960) p. 109

JEWELRY FROM THE ENVIRONMENT

by

DOUGLAS LAWRENCE KOLLMEYER

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CHAPTER I

INTRODUCTION

Throughout history man has created objects to adorn and decorate himself. Some had mystic and religious motivations, other symbolic meanings, and still others were purely decorative ornamentation.

For some time this candidate has had an interest in the application of both sculptural and environmental form to jewelry making. In exploring this interest, a series of jewelry objects to be worn, as well as flatware and holloware, were started, utilizing designs created with inspirations from the natural environment. The original ideas have been modified in accordance with the processes, alloys, and intended use. The pieces were designed to satisfy both aesthetic and utilitarian needs. The intention was not to simply copy from nature but to express a visual response to interactions with nature, the environment. Some of the pieces have a more direct visual tie to the environment, whereas others have a more abstract link. The abstract approach was inspired also by primitive art, by the work of sculptors such as Henry Moore, Constantin Brancusi, Hans Arp and David Smith, and by the explorations of a wider group of younger contemporary craftsmen.

Currently with the development of my own creative work, my art teaching in the Vancouver, Washington Public Schools utilized, in varying degrees, the students' perceptions and experiences with the natural environment as the basic source of concepts in their jewelry making and other related objects.

This thesis presents, both by illustration and description, a selection of jewelry, flatware, and holloware described above. And it also records the curriculum content in classroom jewelry making and its implementation in my own teaching with the hope that this will contribute to an increased development of the imagination, creativeness, and expressiveness of the work of my students as well as offering an effective approach to others in the teaching of jewelry.

CHAPTER II

STATEMENT OF THE PROBLEM

The Problem. The purpose of this study was essentially twofold: (1) to produce a body of creative work including jewelry, flatware, and holloware inspired initially by environmental forms in nature, and (2) to develop and implement a curriculum in jewelry making through my teaching in the junior high and early high school levels in the Vancouver, Washington schools.

The creative work stressed both aesthetic and functional qualities. During the design and construction phase, solutions remained flexible, resulting in modifications prompted by their intended use, alloys and processes employed. Furthermore, varying degrees of abstraction were introduced to achieve a marked sculptural effect which reflected influences from earlier primitive art forms as well as from the treatment of volume by the sculptors Henry Moore, David Smith, and others.

In the teaching component, the chief motivation was the students' perceptions of the natural environment paralleling the motivation of my own creative work presented in this study. The teaching strategy also involved the importance of the teacher and the teacher's own capacity as a producing artist-craftsman, which became a pervasive inspirational factor. Included in this segment

was the development of a curriculum in jewelry teaching, identification of techniques, materials and equipment, along with a selection of representative student work.

Importance of the Study. Since the employment of organic forms has been one of the prevailing inspirations in my sculpture and jewelry for a period of several years, it was the intention of this study to provide a concentrated period for the application of this motivational source to a body of work in jewelry, flatware, and holloware. The developmental approach allowed for flexibility in modifying the original ideas to accommodate: (1) the functional requirements, technical processes, and the potentials as well as restrictions inherent in the materials used. and (2) the infusion of influences, both intuitively and consciously, from primitive art styles and work of certain well-known sculptors previously identified. It was thought that the knowledge and additional technical experiences gained in this undertaking would contribute significantly toward my growth as a professional artist, and, perhaps more importantly, serve as a stimulant and motivation in teaching. This in turn should help to promote a genuine interest and more effectively maximize creative growth of students. In addition, the results of using a sensitivity to environmental forms, conditioned by technical requirements and by function, as a broad motivational source should be of value to other teachers of jewelry and related work.

Limitations of the Study. This thesis was composed of two inter-related components: (1) the designing and production of a body of creative work including jewelry, flatware, and holloware,

and (2) the development and implementation of a curriculum in teaching jewelry appropriate for the junior and senior high school levels.

The creative work was limited to: (1) approximately sixteen pieces of jewelry, with the final number included to be determined by the results of the study and in consultation with the thesis committee; (2) four place settings of flatware with each consisting of a knife, fork, and spoon; and (3) four pieces of holloware. The materials used were gold, silver, nickel silver, silicon bronze, copper, and precious, semi-precious and common stones. Techniques used included fabrication, lost wax casting, and raising, with bezel and crown settings used in pieces containing stones.

The curriculum and motivational experiment in teaching was limited to jewelry with ninth grade students, and included the following specific jewelry projects in this order: (1) simple fabrication stressing the use of basic tools and equipment; (2) sand casting with pewter, combined with inlaid exotic woods; (3) lost wax casting using silicon bronze and brazing rod. The regular teaching program in which the student population of this study was enrolled, involved a class of approximately thirty students, all of whom completed one jewelry project during the term. However, for the purpose of this study, fifteen students participated in all three of the projects listed above. These projects were carried out within a period of one month. Student work illustrated in the thesis is limited to a representative selection to adequately illustrate each of the three projects.

CHAPTER III

REVIEW OF THE LITERATURE

Introduction. Basic to the undertaking of this study was a broad review of writing in the fields of jewelry making, metalsmithing, the content of art, art criticism, and art education. Of the many excellent references published in each of these areas, only a summary of representative sources, or of those especially helpful, is included.

Development and Design of Jewelry, Flatware, Holloware. Although the use of jewelry as a decorative and symbolic accessory has been in evidence throughout the ages, there has been a particular revival of interest in jewelry making as an important art form since the early 1950's. In recognizing this, von Newmann[1] writes: "The significant increase in both the creation and the use of jewelry in the past few decades restates the truth that is many thousands of years old; man needs personal adornment." Throughout ancient time and up to our own day craftsmen have created objects from metals, bone, wood, clay and stones for personal wear as well as for mystical, religious and social purposes. Indeed, some of the most impressive and skillfully formed jewelry and other small metal objects by people from prehistoric and

[1]Robert von Newmann, The Design and Creation of Jewelry revised edition (Radner, Pennsylvania; Chilton Book Company, 1972) p. vii

early cultures in Middle and South America, Egypt, Africa, and Mesopotamia were inspired by living forms; birds, animals, insects, plants, and the human body itself. These received various interpretive treatments, reorganization, and an imaginative expressiveness. From the late Gothic period, and on into the eighteenth century in Europe, high levels of technical skills were developed in making jewelry, reliquaries, book covers, hair and costume adornment. Metalsmithing and gem preparation became important professions. The artisans of each age with its social, religious and stylistic influences interpreted these influenced through their jewelry and object design. Excellent resumes of the history of jewelry design and development are presented by Morton[2] and von Neumann.[3] Vilimkova's[4] book on the jewelry of Egypt is one of the most definitive and beautifully illustrated references that covers the design, technical advancement, and uses of jewelry and related objects in that part of the world from the prehistoric to the latest dynasty.

This experimentation and expressive interpretation continues today. The sources of inspiration that have spanned the centuries include a myriad of forms; natural, man-made, intuitive. As von Neumann says in writing about the stimulation of the artist-designer:

> "He must be an art historian, not to catalogue and describe, but rather to dissect, to analyze, and and to explore. He must be a naturalist, discovering for himself the relationships of shape, color and texture in the natural forms around him. All he sees, all he senses is stored for future use. The greater the experience of seeing and feeling, the less possible it is for the artist to be caught with only a conventional, or trite solution to a design problem."[5]

[2]Philip Morton, Contemporary Jewelry (New York: Holt, Rienhart and Winstons, Inc. (1970) pp. 15-32

[3]Robert von Newmann pp. 10-13

[4]Vilimkova's , Egyptian Jewelry (London:Paul Hamlyn, 1969)

[5]Robert von Newmann p. 223

Creative work in the present study employs, as the initial motivation, forms, experiences, and preceptions deriving from the natural environment. Then the free-association approach follows, which proved most productive in seeking creative solutions. This permitted the combination of seeing, thinking, and imagining. For as Arnheim[6] comments, "All perceiving is also thinking, all reasoning is also intuitive, all observation is also invention." Ocvirk[7] agrees when he states: "All spatial implications are mentally conditioned by the environment and experience of the viewer. Vision is experienced through the eye, but interpreted with the mind." There is precedence for the intuitive method in developing spatial forms. A typical support from the literature for this approach is Rasmusen's comment:

> "Because of the complexity of all these factors it can be readily understood why the intuitive senses must play the greater part in volume placement, space interval timing, and coordination of all the forces into a form that is vital and complete."[8]

Many contemporary jewelers today, as in the present study, work with their own realizations of the capacities and beauty of metals and other materials. They generally use the basic processes, most of which have been employed since ancient times, but in forms that reflect our own age and personal interpretations of experiences. It is recognized that many forms in our industrial and automated society are dehumanized and tend to promote mass conformity. Philip Morton

[6]Rudolph Arnheim, Art and Visual Perception (Berkeley: University of California Press, 1954) p. viii

[7]Otto G. Ocvirk, and others, Art Fundamentals (Dubuke: Wm C. Brown Company Publishers, 1960) p. 109

[8]Henry N. Rasmusen, Art Structure (New York: McGraw-Hill Book Company, Inc., 1950) p.55

seems to have this in mind when he speaks of the artist's role in maintaining expressive values:

> "The present day focus on material and technological products is a manifestation of the extent to which people have been severed from their emotional and spiritual roots in reality as an integral part of the natural world. The split, of course cannot be remedied by an abandonment of science and a return to nature. The answer lies in humanizing our technological environment so that it is reciprocal and not antagonistic to the human organism. This is one function of contemporary art. The visual arts, like music, convey an expression of reality that cannot be made verbally, and this expressive function is shared by contemporary jewelry."[9]

While the aesthetic and expressive qualities should be emphasized in solutions in jewelry making, they should be coordinated with the intended function and comfort for the wearer. Willcox recognizes the importance of considering all design components when he states:

> "....the designer must keep uppermost in his mind that the ultimate purpose of his jewel is to adorn a living breathing human being. There are those who get so involved in fashioning masterful works of art that they forget to make their jewelry wearable. I've seen rings that were so oversculptured and cumbersome that they could not be worn with any degree of comfort. I've seen earrings that were too heavy and hung far too low on the earlobe, necklaces that choked, and arm bands that could not be fastened by one person alone."[10]

In the candidate's work, attention was given to the aesthetic quality, three-dimensionality, sculptural properties from all viewing angles, and to how the pieces were intended to be worn.

Regarding technical procedures in jewelry making, the three most complete and helpful references, all with excellent illustrations, were

[9] Philip Morton

[10] Donald J. Willcox, New Designs in Jewelry, (New York: Van Nostrand Reinhold Company, 1970) p. 14.

those by Edwards,[11] Morton,[12] and von Neumann.[13] The book by Willcox[14] presents a good treatment of the philosophical basis of jewelry designers and is mainly a "gallery" of unique and fresh solutions in contemporary jewelry.

Forging techniques are quite completely covered in published works on silver smithing, but very little information was found in the literature on multiple flatware production related to carrying out the organic and greater three-dimensional sculptural form of the flatware included in this study. After experimenting with different casting methods, the gravity pour process was used. The greatest assistance in determining the proper procedure for casting and selection of alloy to insure the best strength and durability came from consulting with Lyle Isaak, Manager of Maiden Bronze Fine Art Foundry.[15]

Several good books on holloware techniques were reviewed, with the best being that by Douglas Steakley.[16] Others with useful selections

[11]Rod Edwards, The Technique of Jewelry, (New York: Charles Scribnger's Sons, 1977)

[12]Philip Morton

[13]Robert von Neumann

[14]Donald J. Willcox

[15]Lyle Issak, Manager, Maiden Bronze Fine Art Foundry, Sandy, Or.

[16]Douglas Steakley, Holloware Techniques , (New York: Watson-Guptill Publications, 1979).

were by Bovin[17] and Humez.[18] One of the most fascinating and informative sources on the historical development of metalsmithing is a Time-Life book by Knauth.[19] It points out that the raising of holloware was invented in Sumer about 3,000 B.C. and contains a section showing a noted silversmith, Kurt Matzdorf, raising a silver bowl using the tools that the ancient silversmith could have used--a tree stump, a sheep's shank bone, several stones and a wooden stake.[20] Even though more modern tools are available to craftsmen today, their methods are little changed from those of the smiths of long ago. And the example above is dramatic proof that no mass production or machine can produce a bowl with the individuality and beauty of such a piece crafted by hand.

Background to the Teaching Unit. Many informative books on art appreciation and treatment of design were reviewed. Those by the following authors were particularly helpful as references in the teaching unit: Hastie and Schmidt,[21] Schinneller,[22] Feldman,[23] and Collier.[24] Also of special help in the understanding of sculptural

[17]Murray Bovin, Silversmithing and Art Metal, (Forest Hills, Long Island, New York: Bovin Publishing, 1976) pp. 50-72

[18]Nicholas D. Humez, Silversmithing, A Basic Manual Toronto: Little, Brown and Company, 1976) pp. 97-113

[19]Percy Knauth, The Metalsmiths , (New York: Time-Life Books, 1974)

[20]Knauth, pp. 74-75

[21]Reid Hastie and Christian Schmidt, Encounter with Art (New York: McGraw-Hill Book Company 1969)

[22]James A. Schinneller, Art Search and Self Discovery (Scranton: International Textbook Company, 1968)

[23]Edmund Burke Feldman, Art as Image and Ideas (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1967)

[24]Graham Collier, Form, Space and Vision, third edition (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1972)

form were books by Cheney[25] and by the editors of Newsweek Books.[26]

Since the purpose of the teaching component in the present study was to develop and carry out a unit in jewelry making as a part of the art curriculum in the secondary school, the review of literature in this area was mainly centered on motivation, and other aspects of the teaching role pertinent to the unit involved. Whereas the general or specific goals of the total on-going art program were not stressed as part of the study, these were certainly integral with the teaching procedure and achievement of students.

The significant role of the teacher is recognized by several authorities. Lowenfeld and Brittain have a strong conviction that the teacher is the most important factor in teaching art.[27] Being specific, they say: "The teacher has the important task of providing an atmosphere conducive to inventiveness, exploration, and production."[28] It has long been the objective of the candidate to gain proficiency as a professional artist to parallel and support the teaching theory which is implicit in the dual purpose of the thesis. This view is inferred by Hubbard:

[25]Sheldon Cheney, Sculpture of the World, (New York: The Viking Press, 1968)

[26]Editors of Newsweel Books, Sculpture, (New York: Newsweek Books, 1975)

[27]Viktor Lowenfeld and W. Lambert Brittain, Creative and Mental Growth, 5th edition (London: The Macmillan Company, 1970) p. 57

[28]Lowenfeld and Brittain, p. 58

> One of the most influential concepts that has been developed to describe the art teacher's task in the school has been that of the "artist-teacher," that is, a person who is intimately concerned with teaching art to young people and is equally concerned with his own artistic production.[29]

Many researchers and experienced teachers have dealt with the objectives of art programs, and even though these are constantly modified or repositioned in emphasis, there seems to be general agreement on a basic core of anticipated outcomes. Hubbard lists the broad objectives as: visual sensitivity; cultural identity; leisure education; and nurturing talents.[30]

Representative of art curriculum guides, The Secondary Art Guide for Washington identifies four main areas that should be stressed in the art program; evolution of present culture from the past; training in perceptual sensitivity; aesthetic growth; creative development of the individual.[31] Lowenfeld and Brittain[32] say "Art should provide the opportunity for the high school student to express his feelings and emotions and feel that his art is important to himself and to others." They also stress the importance of aesthetic awareness and how this is inseparable from creative experiences:

> Aesthetic development cannot be separated from creative development. Both are bound up with the whole process of growing and are influenced by

[29]Guy Hubbard, Art in the High School (Belmont, California: Wadsworth Publishing Company, Inc. 1967) p. 128

[30]Guy Hubbard, p. 216

[31]Louis Bruno, State Superintendent of Public Instruction, Secondary Art Guide for the State of Washington (Olympia, Washington: State Office of Public Instruction, 1965) pp. 16-17

[32]Lowenfeld and Brittain, p. 312

> all of the variables from our environment that make us different personalities. In a broad sense aesthetic education deals with a whole range of experiences in art, including the production of art forms. Some definitions include the observation and understanding not only of art but also of nature....[33]

There is strong support in the literature for the type and diversity of motivational sources used in this teaching component, for example, the observation by Hastie and Schmidt:

> ....those who are responsible for art products which appear to have very little physical resemblance to natural objects and form have constantly referred to their indebtedness to nature as the source for their work. From time of the caveman to the present nature has been the major source and resource for artistic expression.[34]

A statement by Schinneller suggests an expansion of the ways to view natural phenomena:

> Nature may even be elevated and examined through organic substances excitingly suspended in space ....Matter and space tend to become one. Dynamic contours, linear variations, and fluctuating shadows, when viewed from any angle also assure a wealth of patterns.[35]

Relative to the procedure and planned sequence of the projects in jewelry teaching. The transition from more simple to more complex, from initial inception of an idea to its solution, and then

[33]Lowenfeld and Brittain. p. 312.

[34]Hastie and Schmidt, p. 293.

[35]James A. Schinneller, Art, Search and Self Discovery (Scranton: International Textbook Company, 1968) p. 318.

who also speak to the importance of gaining self identity through this means:

> From the first conception of the idea, through the problem solving and technical mastery, to the final very personal result this entire process must be grasped by the individual. Thus, any such creative activity should be an honest representation of its creator and of the material and be designed for its true purpose or function. Art education is ideally suited to maintain this self-identification with the whole span of production, usually unattainable to any one person in our modern, technically oriented age.[36]

Another of the impelling motivational sources integral in the teaching unit was the selection of materials and processes to provide an exciting atmosphere for learning. This approach is recommended in the Washington Secondary Art Guide:

> Early adolescence is a time of keen interest in the new and unusual. Problems that involve experimentation, the use of techniques and materials new to students, evoke enthusiastic responses and produce better than average results.[37]

A research experiment by Beitle and Mattil dealing with the comparison of the "depth" versus "breadth" methods of art instruction at the ninth grade level is reported by Eisner and Ecker.[38] Several findings were pertinent to this study. The depth group registered significant gains in both aesthetic quality and spontaniety. Also, the "depth" approach allowed for a wider range of differences to be reflected by the art product and for more of the whole person to be related to the art activity than did the "Breadth" approach.

The decision to concentrate on certain aspects of jewelry making for a period of one month in the teaching experiment provided a similar "in-depth" experience.

[36]Lowenfeld and Brittain, p. 312

[37]Bruno, p. 27.

[38]Elliot W. Eisner and David W. Ecker, Readings in Art Education (Waltham, Massachusetts: Blaisdell Publishing Company, 1966) p. 254

CHAPTER IV

DIVERSIFIED SERIES OF JEWELRY AND UTILITARIAN OBJECTS

Introduction. This chapter describes the evolvement of creative work from the initial conceptual stage through any changes felt advisable because of aesthetic and functional considerations as well as those necessitated by properties of materials and techniques used in their formation. In some instances, more than one view of particular pieces was illustrated to show more effectively the impact of both positive and negative forms and their interplay in the total concept. When appropriate, specific technical procedures were explained or outlined.

Jewelry to be worn for personal adornment. The inspiration for all of the jewelry pieces stems directly from organic natural forms. They vary from common house plants, trees, bark, different types of moss, to forms as large and unspecific as views of hilly landscapes. In each individual work, several steps were followed to achieve a final design:

1. Selection of inspirational material.
2. Simplification of forms into an aesthetically pleasing design.
    A. Often times this process caused the initial conception to become totally abstracted which lead to the invention of completely new, fresh forms.

3. Consideration as to how the piece was to be worn.

   A. If on the finger, the ring had to fit not only the finger size but the curvature of the finger webbing. This curve seems to be different on every hand.

   B. If on the wrist, the bracelet had to fit the wrist size and be designed to allow the natural movement of the twisting motion without being uncomfortable to the wearer. A bracelet also had to be easy to put on and remove.

4. Consideration was given to the display of each piece because of the three-dimensional form. Like a sculpture, the work needs to be seen from all sides to allow for its full perception.

This became a developmental process. As stated by Hastie and Schmidt:

> The manipulative experience allowing for variations arising from special considerations involved in the different problems, the process goes forward in something like the following way. First, there is a feeling that something is not quite right, a felt human need to improve, change, or in some fashion modify a situation or product. For the artist this would be a felt need to express his reactions to things and events in his environment--to make a statement different from and an improvement on any that has been made. In this preparation one brings together his knowledge, skill, and techniques, plus the elements of experience. This allows one to define or reduce the problem to a manageable entity.[39]

During this creative action I worked directly with wax, carving away or adding to until reaching a point of refinement felt to be aesthetically rich or rewarding. Drawing, so to speak, directly in

[39]Reid Hastie and Christian Schmidt, Encounter with Art, (New York: McGraw-Hill Book Company, 1969)

wax proved to be the best approach. It allowed the greatest flexibility for viewing the forms being developed and how they related to each other as well as the human element to achieve three-dimensional composition; for instance, with a cast ring this promoted viewing from all angles--side to side, top to bottom--giving complete importance rather than the traditional importance of the top surface plane.

At this point the technical process began. I concentrated on the lost wax casting process for this segment of my study. In brief, the process involves the following parts:

1. Forming the jewelry piece in wax or other burnable material.

2. Sprueing of the jewelry piece to create a kind of plumbing system whereby the wax can travel from the mold and the metal can be injected into the cavity.

3. Investing of the sprued wax model. This involves encasing the piece in a matrix of plaster of Paris type material in a flask. The matrix is commercially prepared and is simply called investment. There are several brands and types available to the artist, but I selected Kerr Ultra-Vest which through experience I found to be the least expensive and of high quality.

4. Burning out of the mold. This is achieved by placing the mold in a small kiln and heating to a temperature not to exceed 1000°F until the sprue opening appears white without any wax residue. This step creates a cavity in the mold in the same form as the wax prototype.

5. Injection of the selected metal into the cavity. For my study and for students' work the gravity and centrifugal casting methods were used. With the gravity pour method, the flask cylinder is set, with sprue-channel up, on an asbestos or brick block. The metal is then melted in a crucible and poured into the opening. The trapped air in the passages escapes through the air vents, which are part of the sprue system, as well as into the investment itself. Because of its semi-porosity, the air can be absorbed into the investment but the metal is not. The metal then filling the cavity is allowed to cool, solidify, and is then removed from the investment. With the centrifugal casting method, after the wax is burned out, the flask cylinder is placed in a machine called a centrifuge, and fitted into place in front of the crucible. The nose of the crucible should fit directly in line with the sprue-base opening of the flask mold, allowing a direct flow of the metal into the sprue-channels. The centrifuge is balanced, wound the desired number of times, and held by the spring-tripper. The metal is melted in the crucible to a completely molten, flowing consistency. The spring is released, and centrifugal force causes the molten metal to flow into the mold cavity. The metal is allowed to solidify and is then removed from the investment by placing the whole mold in a bucket of water. The water causes the still hot investment to break away from the casting, leaving the metal form.

6. Removing the sprues and finishing. The sprues are removed with a jewelry saw and then filed to the desired surface. Further finishing is done with wet or dry sandpaper and buffing compounds of tripoli and rouge, in that order, until the final desired finish is obtained.

7. Stone setting, which was done on some problems and not on others. Bezel and crown settings were employed. The bezel setting consists of fabricating a bezel wire to fit around the waist of the stone which is then pushed and burnished down to lock the stone in a static position. The bezel in most cases is backed with a flat piece of metal to prevent the stone from falling through, but there is a bezel wire that has a step, or ridge, that provides this function. It is always kept in mind that the application of a stone is not an after thought but a preconceived component before the casting process. Some stones can even be set in the wax and cast in place, eliminating the need for further steps. A crown setting requires soldering the commercial crown in the desired position and then, using cutting burrs, cutting a seat in the prongs of the crown for the stone to sit and bending the rest of the prongs that stick up above the stone seat down against the stone, holding it in place. Crown settings are most generally used to set faceted stones such as diamonds and rubies. On all the pieces with stones, the finishing was done after the stones were set.

Flatware. The flatware component of the creative work for this study proved to be the most complex of the three segments, and most difficult in terms of final production. This is, in part, a result of the physical limitations of the studio itself. The problem was approached in the same manner as was the jewelry segment, although the added dimension of multiples required a solution before the final avenue could be taken. Scanty information in the area of industrial flatware production, combined with studio limitations, caused several

changes to occur through trial and error. The designing phase moved along smoothly during which several models for the fork, spoon, and knife were made from wax. Initial inspiration came from the eagle's leg as an extension for eating; much in the same fashion as we use a tool as an extension of our hands. The flatware was thought to be in two parts--one the utensil, two the handle. As the designing continued, simplification of form became important to provide a comfortable feel while being held in the hand. Honing of form continued until the final proto-types were produced in a material called File-A-Wax (a hard, dense, almost plastic-like commercial carving medium). The next step involved making plaster of Paris molds that wax could be poured into to make multiples. At first I attempted to make the spoon, fork, and knife solid with a hollow handle cast centrifugally. The size of the investment mold needed for this step proved to be too large for my centrifuge to handle, so I redesigned the casting arm of the machine to handle a six and one half inch long flask. This worked well for casting the spoon, fork, and knife sections but didn't work for the handles. Several castings were attempted for the handles, using different sprueing techniques as well as different metals, but results were still unsatisfactory. After exhausting all the feasible possibilities of my studio equipment, I elected to consult with a commercial foundry. It was finally decided to cast the handles solid by the gravity pour method using silicon bronze and doubling the size of the sprue system which produced perfect castings. Finishing of the pieces followed; then the handles were fastened together with the spoons, forks, and knives with threaded stainless steel pins and industrial grade epoxy-impregnated hardwood (dishwasher safe) spacers to give the final solution to the problem.

Holloware. The portion of this study dealing with holloware was handled in a more direct approach. By this, I mean, a design was made by drawing and then work began directly on the flat metal. The traditional methods of raising with hammers and stakes was combined with casting and fabrication to achieve volumetric forms. There are basically two methods of smithing the bowl form from a flat sheet of metal: raising, which is hammering from the outside with a cross-peen hammer, or stretching, which is hammering from the inside with a dome-face hammer. Both were used.

It was important to have a complete knowledge of the following basic techniques to carry out the holloware objects.

1. Hammering and forging.
2. Annealing and fluxing.
3. Pickling.
4. Soldering.
5. Planishing.
6. Finishing.

The two silver goblets and gold plated chalice are recognizably functional, whereas the seed form is meant to be a conceptual or aesthetically pleasing exploration. The three functional pieces derived from viewing European holloware, with the incorporation of vine-like stems on the silver goblets, and the religious influence of the cross for the stem on the chalice. I found the blending of these ideas to be quite successful in the end results. In the sculptural raised form, "The Seed," inspiration was a direct personal response to the growth and extension of a living plant from seed.

JEWELRY, FLATWARE, AND HOLLOWARE

by

DOUGLAS L. KOLLMEYER

FIGURE 1

FIGURE 2

Lost Wax cast gold, silver with ruby ring' inspired by animal bone forms.

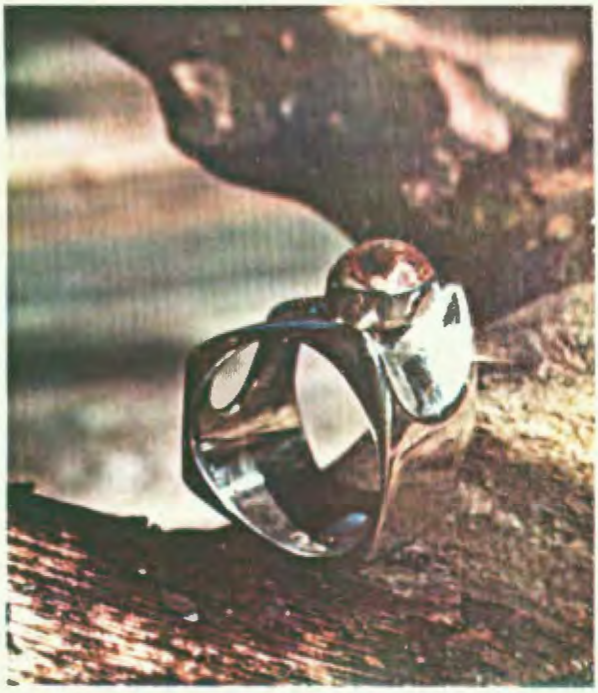


FIGURE 3

FIGURE 4

FIGURE 5

Silver with bezel set Mexican opan ring, using lost wax casting based on tree forms.

FIGURE 6

FIGURE 7

FIGURE 8

Silver ring with bezel set Ivory, Lost wax cast;
Inspired by wild flower buds.

FIGURE 9

FIGURE 10

FIGURE 11

Lost wax cast silver ring; concept derived from leaf structure of ferns.

FIGURE 12

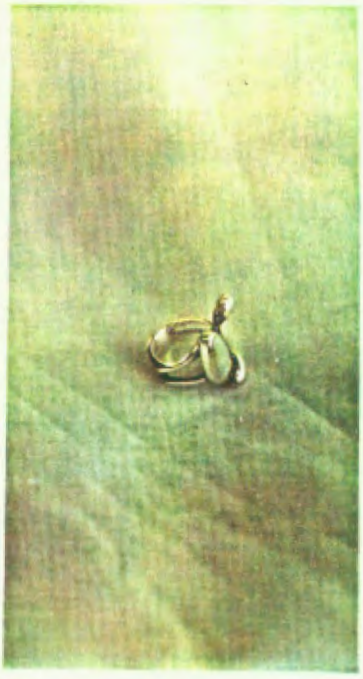


FIGURE 13

Silver and bezel set opal ring, using lost wax casting; inspiration from plant seed.

FIGURE 14

FIGURE 15

14K, Gold ring, lost wax cast; the creative inspiration came directly from the shape, facets, and size of the bezel set precious topaz.

FIGURE 16

FIGURE 17

14K, Gold ring with bezel set star saphire, lost wax cast; inspired by Egyptian jewelry and religious philosophy.

FIGURE 18

FIGURE 20

FIGURE 19

Design for this 14k. gold ring with crown set diamond is from barnacles on an oyster shell.

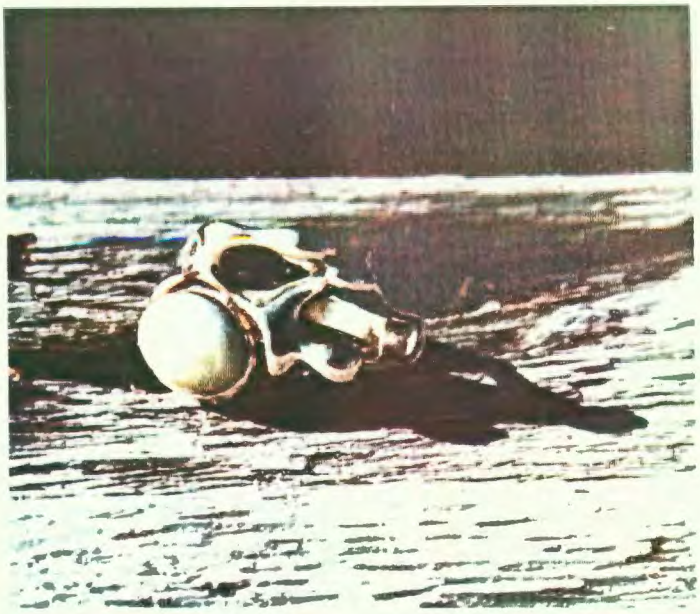


FIGURE 21

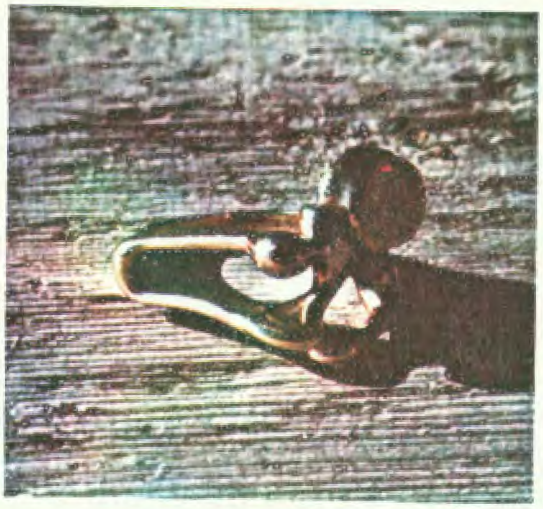


FIGURE 22

14k. gold ring with bezel set white opal; lost wax cast; based on designs found in ocean beach sand.

FIGURE 23

FIGURE 24

14k. gold ring with prong set baroque pearl and crown set diamond; lost wax cast; ball socket and other bone forms inspired the final form.

FIGURE 25

FIGURE 26

FIGURE 27

Wedding set, 14k gold with diamond; lost wax cast; based on the intertwining of grape vines.

FIGURE 28

FIGURE 29

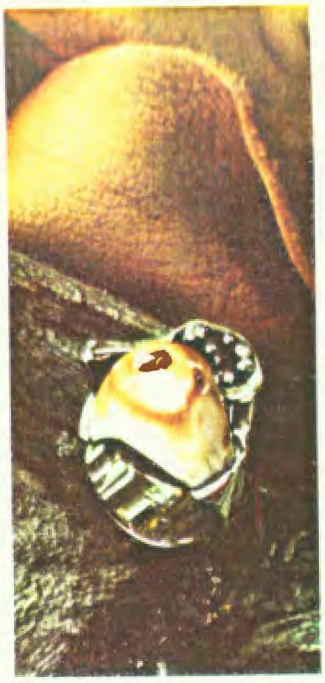


FIGURE 30

Lost wax cast silver ring with compression set elks tooth ivory; inspired by the shapes and form of the tooth and how the tooth would fit in the gums,

FIGURE 31

FIGURE 33

FIGURE 32

Crown set diamond in 14k gold ring; lost wax cast; inspired by the splash of a rain drop.

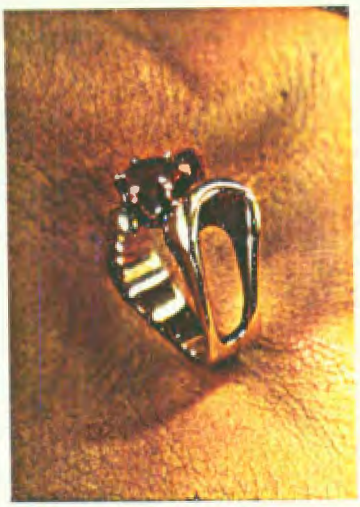


FIGURE 34

FIGURE 36

FIGURE 35

14k Gold ring with crown set belly drop ruby; designed from bone forms.

FIGURE 37

FIGURE 38

FIGURE 39

14k Gold ring, crown set diamond; lost wax cast;
the opening of a seed pod was the major influence.

FIGURE 40

FIGURE 41

FIGURE 42

14k Gold ring, prong set cultured pearl and crown set diamond; inspiration provided by shadows on rock formations.

FIGURE 43

FIGURE 44

14k Gold ring with three bezel set pink jade stones, lost wax cast; inspiration came from the three jade pieces.

FIGURE 45

FIGURE 46

FIGURE 47

Fabricated silver bracelet with bezel set turquoise and prong set natural pearls. Based on grain designs in driftwood.

FIGURE 48

FIGURE 49

Silver bracelet produced with combination of lost wax casting, fabrication, and bezel set turquoise. Design was taken from a scenic view of a lake with background hills.

FIGURE 50

Silver and bezel set opal necklace; fabrication and fusing techniques were employed. The fusing process inspired this work.

FIGURE 51

FIGURE 52

Table sculpture; nudes; silver and bronze lost wax casting; height 2 7/8 inches.

FIGURE 53

FIGURE 54

File-a-Wax proto type for flatware set.

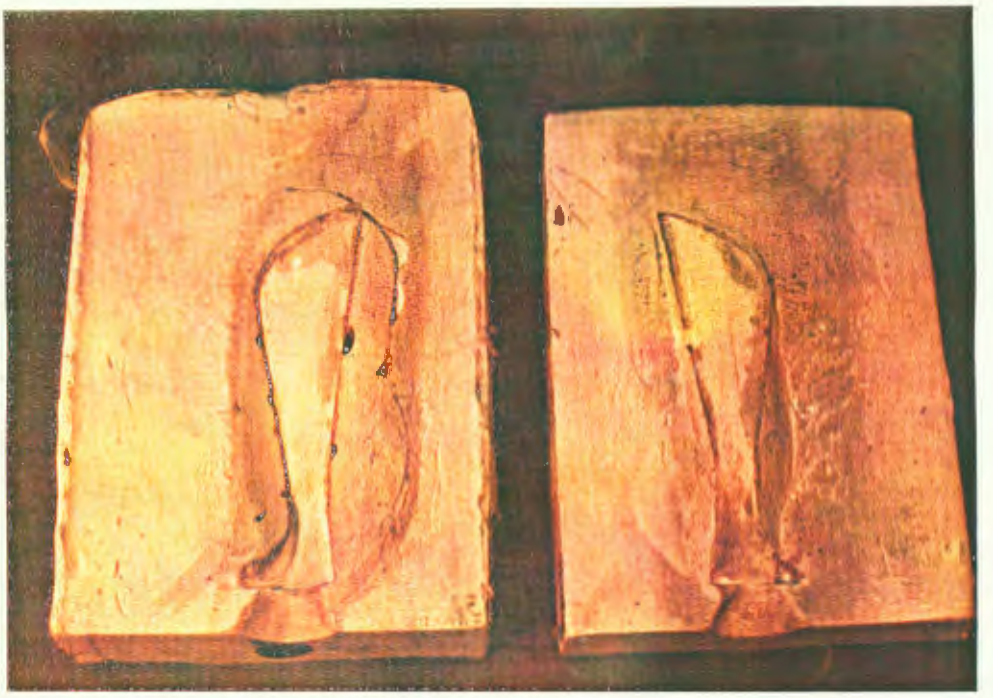


FIGURE 55

FIGURE 56

Knife blade and handle molds, made of casting plaster from proto type.

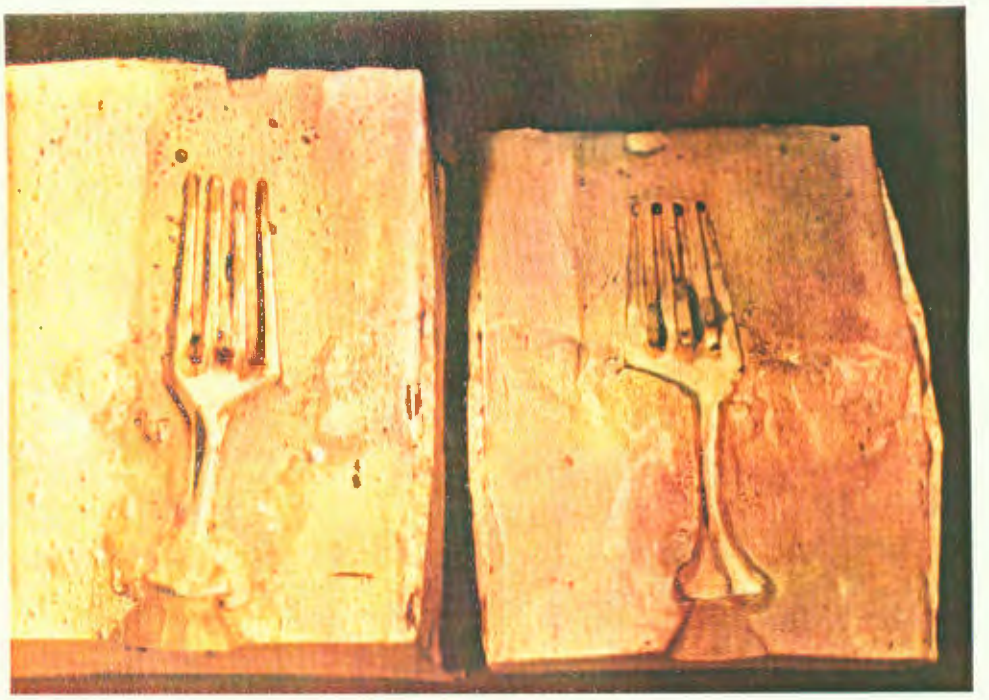


FIGURE 57

FIGURE 58

Cast plaster molds from spoon and fork proto type.

FIGURE 59

Bee's wax models cast from plaster molds.

FIGURE 60

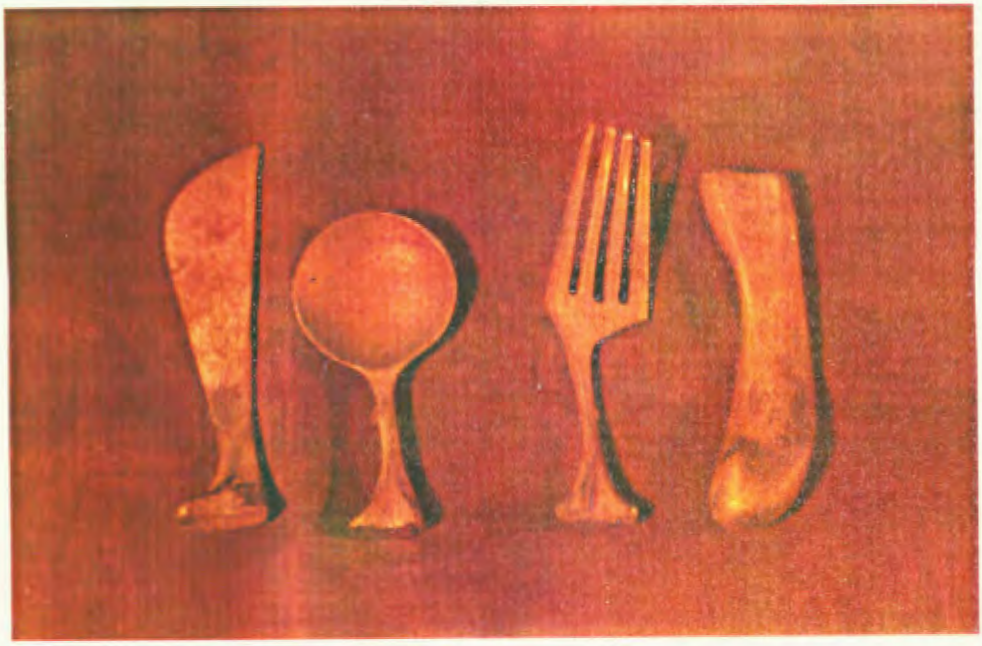


FIGURE 61

Rough silicon bronze casting; top and back views; sprues removed.

FIGURE 62

FIGURE 63

Back and top views of finished flatware; spacers are epoxy impregnated maple.

FIGURE 64

Sterling silver goblets, using raising techniques; inspiration: European holloware and vines; height 6 1/8 inches.

FIGURE 65

Gold plated copper chalice with ebony, using stretching and raising techniques; inspired by European holloware and the cross symbol; height 6 7/8 inches.

FIGURE 66

FIGURE 67

Copper sculptural form, using stretching techniques; motivated by swelling plant seed; width 5 1/2 inches.

CHAPTER V

A RECOMMENDED PROCEDURE IN TEACHING JEWELRY MAKING

Introduction. In the development of teaching strategies for this study, first consideration was given to the complexity of processes that the level of student could handle and achieve success. Both too high and too low a degree of difficulty could prove to be an unrewarding experience for students as well as for the teacher. The ninth grade group participating in the study had varying backgrounds in jewelry making. Some had done enameling, some a simple soldered copper band ring, and none had casting experience. The decision was made to start the students with simple fabrication of copper or brass rings, a plaque or pendant. By starting with this project, the students with some experience could review and also assist in helping those with no experience through normal classroom interaction. This starting point would also acquaint students with jewelry vocabulary, tools, soldering, pickling, drilling, design elements, sawing, filing, sanding, buffing, etc. The second project was sand casting with pewter and inlaying of exotic woods. This was simplified to remove technical barriers and increase success levels. The last project was lost wax centrifugal casting which was the most difficult technically. It was assumed that by offering the projects in the above order, each would lead to the next, thus building a background in techniques, enthusiasm, and confidence in their abilities to handle the third and most complex challenge.

Resources for Motivation. Inspiration for the student's jewelry expressions came from their experiences with the natural environment. No matter what facet of a student's total environment is used, it is the teacher's responsibility to reactivate these experiences and give them an immediacy that will trigger the student into an art expression. Questioning interactions should be designed to encourage seeing and thinking. The important thing is the idea, which in turn can be transformed into a piece of jewelry. "Indeed, most anything conceived in the recesses of the mind, experienced, or believed may be constructed in three-dimensional form."[40]

The instructor must be able to help the student identify the significant aspects of the experience. In many instances, the teacher will have to provide the students with the motivating experiences through planned field trips, and very often through vicarious means in the classroom. This can come from films, slides, magazines, bones, plant life, aquatic life, driftwood, animals, and many other similar inspirations. Each project set up for the students must provide a variety of challenges, be keyed to the level of the student, have available a wide range of materials, and should start with some kind of motivation while showing the materials needed by the use of a short demonstration. As the students progressed with their own hands-on experience, they were given a demonstration of three steps in succession, i.e: (1) how to select inspirational material, (2) transformation of ideas into a finished, refined design, and (3) layout of design on metal.

[40]James A. Schinneller, p. 318.

The manner in which a new experience is presented is, in part, the reason a project is a success. The demonstrations must be kept short without leaving out important factors of the art experience. This requires a great deal of planning on the teacher's part. The jewelry program should provide experiences for the students in such a manner that they can show self expression, gain in technical skills, have aesthetic development, experience increased self-confidence, achieve desirable work habits through self-discipline, and develop independent thinking, problem solving and creativeness.

Fundamental Processes. Project I - Fabrication was set up to give the students the background required for most jewelry experiences. Than includes the proper use and terminology for the following tools and minor processes.

1. Designing
2. Template
3. Jewelry Saw frame/blade
4. Saw Block
5. C-Clamp
6. Hand drill
7. Ring mandrel
8. Ring sizers
9. Rawhide mallet
10. Soldering - easy, med, hard
11. Presto Lite torch w/tank and gauge
12. Annealing
13. Pickling
14. Needle files and filing process
15. File card and brush
16. Wet or dry sand paper
17. Sanding technique
18. Buffer w/buffs
19. Tripoli and rouge

The assignment given was to design and create in metal one or more of the following items: (1) copper or brass ring with a pierced design; (2) copper plaque with a cut out design; (3) a pendant with a contrasting background, also to be pierced.

Project II - Sandcasting with pewter and inlaying of exotic woods in a process that combines some fabrication steps as well as a simple casting process. Students started by designing an object that was to be flat or of frontal view only, like a pendant, belt buckle face, etc.

Their designs were worked out with cut outs of black and white paper. The black cut outs were then used as templates for cutting out shapes from flat pieces of iron wood, rose wood, ebony, or the like. The density of the wood is important because it resists burning quickly when the molten pewter is poured over it. The white shapes were used to make an outside shape to represent the metal. The white shapes were duplicated in heavy tag board and then glued in layers to a thickness of approximately 1/8" thicker than the wood piece. The students brought tuna cans with both ends removed, to use as flasks. I provided small squares of 1/2" plywood with one having a half cone shape filed out of the edge, this was used as a pour spout for filling the mold. Making the mold was accomplished by placing one plywood piece on a flat surface with the tuna can flat on that, then the tag board template was centered in the can and petribond sand filled in around it tightly to the top of the can. After completing this, the mold was inverted, the board removed, and the tagboard piece taken out, leaving a duplicate impression. Next the wood cut out, with a drop of elmers glue on the back, was centered and placed carefully in the same impression. The glue holds the wood from moving when the metal is poured around it. A sandwich then is made with the two plywood pieces and the mold, using the plywood piece with the cone notch leading to the impression. That completes the mold. Pewter was melted in a cast iron ladle over a hot plate, (this was possible because of the 437°F. melting point of pewter.) then poured in the mold, then allowed to cool, and removed from the mold. The wood is locked tight in the pewter with one side of it exposed. The students then used files and sandpaper to do the rough finishing. The buffer was used for the final polishing.

Project III - Lost wax casting, which is the most technical of the three projects, has several secondary processes attached to it. These processes or steps have been fully described in Chapter IV above. The students were introduced to this project in the same fashion as they were the other two and assigned to complete a casting of a ring inspired from natural shapes or forms. It was furthermore stipulated that the three-dimensional designs from nature had to work completely around the ring and relate to the curvature of the hand.

Tools and Equipment. Specific equipment was necessary to conduct the above three projects. The following is a listing of tools and equipment used, although it should be noted, many of the tools and equipment items could be substituted or even improvised.

1. Presatolite acetylene torch
2. Drill press - drill bits
3. Band saw
4. Buffing machine/with buffs
5. Burn-out kiln
6. Centrifugal casting machine - complete
7. Pickling vat/with pickling solution
8. Charcoal blocks
9. Jewelers saw frame/with saw blades
10. Saw blocks and C-clamp
11. Solder snips
12. Swiss needle file assortment
13. Flat bastard files
14. File card and brush
15. Alcohol burners
16. Wax tools - x-acto knives
17. Ring sizers
18. Ring mandrel
19. Flask cylinders
20. Small paint brushes
21. Flask tongs
22. Copper tongs
23. Fire bricks - for covering soldering area
24. Wooden bin for petribond sand
25. Squares of 1/2" plywood, 6" X 6"
26. Cast iron ladle
27. Tuna fish cans, or equal
28. Tamper

29. Rubber bowls
30. Sponges
31. Water bucket - metal
32. Vises
33. Raw hide mallets
34. Scissors

Materials. Today there are a wide variety of materials used or adaptable for use in jewelry construction. It is imperative to provide the greatest variety of materials and still work within the limits of the processes. The wider the variety of materials available to the students, the greater the diversity in finished product. As cost is always a factor, a budget of $50.00 was set. The use of inexpensive metals and found objects made it possible to stay within that budget amount. The following is a list of materials used for the above projects.

1. Copper sheet
2. Brass wire
3. Brass sheet
4. Brazing rod
5. Pewter
6. Silver solder
7. Silver soldering flux
8. Silver sheet (students purchased their own if they wanted it)
9. Debubblizer
10. Wax - carvex or file-a-wax
11. Brazing flux
12. Sheet wax
13. Wax sprue wires
14. Investment
15. Petribond oil based casting sand
16. Hard wood pieces - variety of species from dark to light.
17. Tag board
18. Alcohol (denatured)
19. Drawing paper
20. Tracing paper
21. Elmers glue
22. Rouge and tripoli
23. Several grades of wet/dry sandpaper
24. Epoxy glue
25. Crushed turquoise

JEWELRY OBJECTS BY STUDENTS

FIGURE 70

FIGURE 71

FIGURE 72

Fabricated copper and brass rings.

Fabricated spoon ring with etched design.

FIGURE 73

FIGURE 68

FIGURE 69

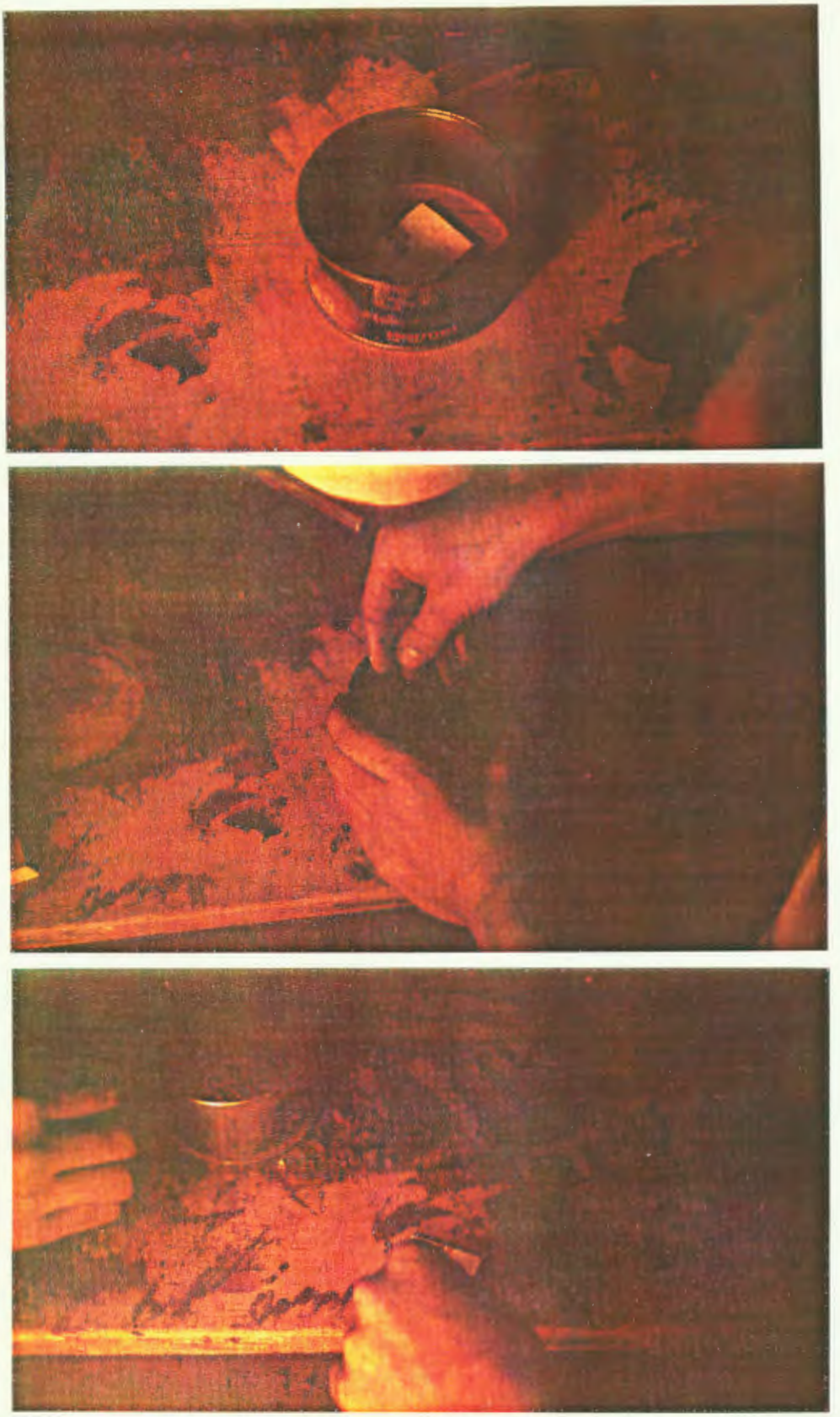
Fabrication; silver on ebony pendants.

Pendant fabricated from found objects, old watch parts.

FIGURE 74

Silver fabricated ring with bezel set ebony.

FIGURE 75



FIGURES 76 - 77 - 78

Sand mold for pewter casting.

FIGURE 79

FIGURE 80

FIGURE 81

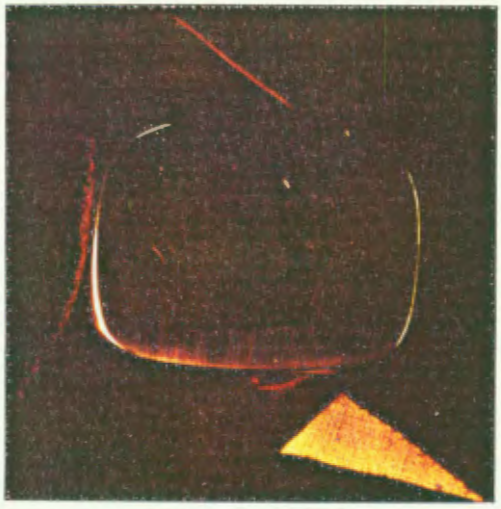


FIGURE 82

Sand cast pewter objects with inlaid wood shapes.

FIGURE 83

FIGURE 84

FIGURE 85

FIGURE 86

FIGURE 87

Lost wax casting with brazing rod; some have inlays of crushed turquoise.

FIGURE 88

FIGURE 89

FIGURE 90

FIGURE 91

FIGURE 92

Lost wax cast rings using brazing rod.

FIGURE 93

FIGURE 94

FIGURE 95

Three views of lost wax cast ring made with brazing rod.

SUMMARY AND CONCLUSIONS

Summary and Conclusions. The purpose of this study was twofold: (1) to design and produce a body of creative work including jewelry, flatware, and holloware inspired in their initial phases by perceptions and responses related to the natural environment, and (2) to develop and implement a unit in the teaching of jewelry making at the early high school level in the Vancouver, Washington schools.

The creative work emphasized both aesthetic and functional qualities along with high technical standards. Throughout the designing and construction stage, ideas and solutions remained flexible, permitting modifications suggested by their intended use, metals and processes employed. Varying degrees of abstraction were incorporated in the final solutions resulting in strong sculptural effects, thus gaining an affinity with both primitive art forms and the work of certain contemporary sculptors while still retaining the spirit and excitement of environmental forms reflecting their rhythms, contrasts and harmonies.

The completed work consisted of twenty-two pieces of jewelry, four place settings of flatware with each consisting of a knife, fork, and spoon, and four pieces of holloware. Materials used were gold, silver, nickel silver, silicon bronze, copper, and precious, semi-precious and common stones. Techniques employed were fabrication, lost wax casting, and raising, with bezel and crown settings used in pieces containing stones.

The teaching component was carried out with ninth grade students and included the following jewelry projects in this order: (1) simple fabrication stressing the use of basic tools and equipment; (2) sand casting with pewter, combined with inlaid hard woods; (3) lost wax casting using silicon bronze and brazing rod. Fifteen students participated in all three of the projects which were carried out in a period of one month. Motivational sources included a variety of natural forms, responses to design possibilities inherant in these, and with complete flexibility in modifying, abstracting, and seeking both individualized and functional forms.

Based on a review of the creative works, it is reasonable to conclude that a higher level of success was achieved. At the outset most of my energy was applied to the jewelry and holloware, but as technical growth evolved, a transition occured. The flatware seemed to be more challenging than the other work. This was possibly due to problem solving struggle that went on in arriving at the final solution. It was within that struggle that my greatest technical growth came about. Some of the problems encountered were; strength and durability requirements, alloy selection, spruing techniques, proper casting procedure, and alignment of the utinsel portion with the handles. Limitations of equipment in my studio proved to be part of the problem.

It is art that makes life, makes interest, makes importance, and I know of no substitute whatever for the force and beauty of its process. Art is a way of doing and seeing, of expressing self, as well as a body of subject matter. For me the body of subject matter was inspired by the environment and will continue to be a major inspirational force. Nature is virtually inexhaustible "library" of forms, and I have barely scratched the surface.

The physical results of the teaching unit are included in the section, Jewelry Objects by Students. They show a high degree of success, however, success should not be measured by the work alone. There are other observable factors that in this study,, support success.. The students exhibited genuine enthusiasm throughout the unit. They demonstrated maturity towards handling of materials and respect for tools. I noted the development of a sense of pride in their achievements, and while listening to the students interact I noted a continual increase in their willingness to share ideas and knowledge.

RECOMMENDATIONS

Several possibilities for further research are indicated. It would be interesting to pursue the designing of commercial flatware. From the literature review, this would appear to be a fairly open field. The concentrated efforts devoted to jewelry production could logically lead into the writing and publication of a book on jewelry design. Another endeavor suggested by the teaching unit might be offering seminars to school districts on Art Curriculum development. The success level observed in the teaching component suggests that the interest in jewelry would support the offering of specialized classes rather than shorter units within a general art program.

A LIST OF WORKS CONSULTED

Arnheim, Rudolph, Art and Visual Preception (Berkeley: University of California Press, 1965) p. viii

Bovin, Murray, Silversmithing and Art Metal, (Forest Hills, Long Island, New York: Bovin Publishing, 1976) pp 50-72

Bruno, Louis, State Superintendent of Public Instruction, Secondary Art Guide for the State of Washington (Olympia, Washington: State Office of Public Instruction, 1965) pp 16-17

Cheney, Sheldon, Sculpture of the World, (New York: The Viking Press, 1968)

Collier, Graham, Form Space And Vision, Third edition (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1972)

Edwards, Rod, The Technique of Jewelry, (New York: Charles Scribnger's Sons, 1977)

Eisner, Elliot and Ecker, David W., Readings in Art Education, (Waltham, Massachusetts: Blaisdell Publishing Company, 1966) p. 254

Feldman, Edmund Burke, Art as Image and Ideas (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1972)

Hastie, Reid and Schmidt, Christian, Encounter with Art (New York: McGraw-Hill Book Company 1969)

Hubbard, Guy, Art in the High School, (Belmont, California: Wadsworth Publishing Company, Inc. 1967) p. 128

Humez, Nicholas D., Silversmithing, A Basic Manual, (Boston-Toronto Little, Brown and Company, 1976) pp. 97-113

Issak, Lyle, Manager, Maiden Bronze Fine Art Foundry, Sandy, Or.

Knauth, Percy, The Metalsmiths, (New York: Time-Life Books, 1974)

Lowenfeld, Viktor and Brittain, W. Lambert, Creative and Mental Growth, 5th edition (London: The MacMillan Company, 1970) p. 57

Morton, Philip, Contemporary Jewelry, (New York: Holt, Rienhart and Winstons, Inc. (1970 pp. 15-32

Newsweek Books, Editors of, Sculpture, (New York: Newsweek Books, 1975)

Ocvirk, Otto G., Art Fundamentals, Debuke: Wm. C. Brown Company Publishers, 1960) p. 109

Rasmusen, Henry N., Art Structure, (New York: McGraw-Hill book Company, Inc., 1950) p. 55

Schinneller, James A., Art Search and Self Discovery, (Scranton: International Textbook Company, 1968)

Steakley, Douglas., Holloware Techniques, (New York: Watson-Guptill Publications, 1979.

Vilimkova, Egyptian Jewelry (London: Paul Hamlyn, 1969)

von Newmann, Robert, The Design and Creation of Jewelry, revised edition (Radner, Pennsylvania: Chilton Book Company, 1972) p. vii

Willcox, Donald J., New Designs in Jewelry, (New York: Van Nostrand Reinhold Company, 1970) p. 14